

Patent claims

1. A method for applying rewiring (1) to a panel (2) while compensating for position errors of semiconductor chips (3) in component positions (4) of the panel (2), the method comprising the following method steps:
- providing a panel (2) which has component positions (4) arranged in rows (6) and columns (7), there being arranged in the component positions (4) semiconductor chips (3) whose edges (5) are not aligned accurately in accordance with the rows (6) and columns (7), so that they have position errors,
 - producing two rewiring masks, a first mask having only external contact areas (8) for the entire panel (2) at predetermined positions in the component positions (4), and a second mask having a uniform rewiring pattern (9) having rewiring lines (10) for an individual component position (4) for connecting contact areas (11) on active upper sides (12) of the semiconductor chips (3) to the external contact areas (8),
 - transferring the structure of the first mask to the panel (2) with a first exposure step in order to prepare for the formation of external contact areas (8) in the component positions (4),
 - optical position registration and evaluation of the position errors of the semiconductor chips (3) in the component positions (4) of the panel (2) and calculation of the optimal alignment of the second mask,
 - adjusting the second mask, while successively compensating for the position errors of the semiconductor chips (3) in the individual

component positions (4) of the panel (2) and while successively transferring the rewiring pattern (9) of the second mask with a second exposure step in order to prepare for the formation of rewiring lines (10) between contact areas (11) on the semiconductor chips (3) and external contact areas (8) in the individual component positions (4) of the panel (2).

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2. A method for applying rewiring (1) to a panel (2) while compensating for position errors of semiconductor chips (3) in component positions (4) of the panel (2), the method comprising the following method steps:

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- providing a panel (2) which has component positions (4) arranged in rows (6) and columns (7), there being arranged in the component positions (4) semiconductor chips (3) whose edges (5) are not aligned accurately in accordance with the rows (6) and columns (7), so that they have position errors,

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- producing an overall rewiring mask having external contact areas (8) and rewiring lines (10) approximately as far as edges (5) of the semiconductor chips (3) in the direction of contact areas (11) on active upper sides (12) of the semiconductor chips (3) for the entire panel (2),

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- optical position registration and evaluation of the position errors of the semiconductor chips (3) in the component positions (4) of the panel (2),

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- transferring the overall rewiring mask to the panels (2) by using a first exposure step in order to prepare for the formation of external contact areas (8) and of rewiring

- lines (10) approximately as far as the edges (5) of the semiconductor chips (3) in the component positions (4),
- 5 - laser-structuring connecting line pieces (13) between the ends (14) of the rewiring lines (10) approximately at the edges (5) of the semiconductor chips (3) and the contact areas (11) on the active upper sides (12) of the semiconductor chips (3) by using a second
- 10 exposure step by means of a laser write beam.
3. The method according to claim 1, characterized in that the adjustment and transfer of the structure of the second mask is carried out by means of
- 15 projection exposure.
4. The method according to one of the preceding claims, characterized in that the transfer of the structure of a mask for the entire panel is
- 20 carried out by means of contact exposure.
5. The method according to one of the preceding claims, characterized in that the laser structuring is carried out successively and
- 25 individually for each connecting line piece (13).
6. The method according to one of the preceding claims, characterized in that the structures of the masks and/or the writing pattern of the laser
- 30 write beam are coordinated with one another in such a way that, in order to transfer the entire structure onto the panel (2), a single photoresist layer for both exposure steps is applied to a metal layer of the panel (2) to be structured.